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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,481

01/20/2006

Pierre Barberis

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EXAMINER

PALABRICA, RICARDO J

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,481	<b>Applicant(s)</b> BARBERIS ET AL.	
	<b>Examiner</b> Rick Palabrica	<b>Art Unit</b> 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2007 and 22 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16-29 is/are pending in the application.
- 4a) Of the above claim(s) 17, 19-21, 23 and 27-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16, 18, 22 and 24-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

1. Applicant's election with traverse of species B, F, H, with claims 16, 18, 22-26 allegedly readable thereon, is acknowledged.

Applicant argues that species A-E have overlaps and species F and G have overlaps, and therefore the claims associated with them meet the unity of invention requirement. The current examiner disagrees. The special technical feature not present in the species belonging to group A-E pertain to the composition where they do not overlap, as stated in section 5 of the 11/20/07 Office action. The same reason applies to species F and G.

In addition, said species do not meet the Unity of Invention requirement, as per Appendix AI (Administrative Instructions under the PCT), Annex B (Unity of Invention), section (c), which states:

*"Independent and Dependent Claims. Unity of invention has to be considered in the first place only in relation to the independent claims in an international application and not the dependent claims. By "dependent" claim is meant a claim which contains all the features of another claim and is in the same category of claim as that other claim (the expression "category of claim" referring to the classification of claims according to the subject matter of the invention claimed for example, product, process, use or apparatus or means, etc.).*

*(i) If the independent claims avoid the prior art and satisfy the requirement of unity of invention, no problem of lack of unity arises in respect of any claims that depend on the independent claims. In particular, it does not matter if a dependent claim itself contains a further invention. Equally, no problem arises in the case of a genus/species situation where the genus claim avoids the prior art. Moreover, no problem arises in the case of a combination/subcombination situation where the subcombination claim avoids the prior art and the combination claim includes all the features of the subcombination."*

In the instant case, independent claim 16, from which the claims reciting species A-E and species F and G depend, does not avoid prior art, as discussed below.

Applicant also argues that “examination of groups A-H together would not impose a serious burden on the Examiner.” The current examiner disagrees. The restriction requirement under the PCT Rules is based on Unity of Invention and has nothing to do with so-called examination burden.

Accordingly, the restriction requirement is still deemed proper and therefore made **FINAL**.

Claims 16, 18, 22 and 24-26 are examined in this Office action by the current examiner. Contrary to applicant’s assertion, claim 23 does not read on the elected species and therefore withdrawn from consideration.

2. The current examiner also acknowledges applicant’s 10/22/07 Response to the previous examiner’s 4/19/07 Office action. Applicant's arguments with respect to the rejected claims have been considered by the current examiner but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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3. Claims 16, 18, 22 and 24-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 16 and 25 recite the limitation, “the rolling performed at a temperature lying in a range ambient to 200 °C.” There is neither an adequate description nor enabling disclosure as to what exactly is this so-called ambient temperature.

4. Claims 16, 18, 22 and 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete, and their metes and bounds cannot be determined because the temperature at which rolling is performed is defined in terms of an unknown “ambient temperature.” Note that there is not one, unique value of the ambient temperature because this temperature varies with location and time.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 16, 18, 22, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (APA) in view of Mardon et al. (U.S. 5,735,978) alone or in combination with either one of Graham (U.S. 3,336,201) or Katz (U.S. 3,776,508). APA discloses the applicant's claim limitations except for the single rolling sequence without intermediate annealing.

Applicant himself admits that:

*"To implement the invention, the method begins by preparing a zirconium alloy flat product using conventional steps of melting an ingot, generally forging the ingot, hot rolling, where appropriate in a plurality of passes optionally separated by heat treatments, generally one or more cold rolling and annealing operations, and finally beta quenching of the resulting material; and then cold rolling and annealing are performed in accordance with the invention." Underlining provided. See page 9 of the specification.*

Thus, APA teaches the first 3 steps in claims 16 and 25, as applicant himself admits. Also, APA, Dahlbaeck (EP-A-0 835 330, dated 1998-04-15) teaches the acicular structure of the alloy in step 3 of said claims (see page 3 of the specification).

As to the last two steps in claims 16 and 25, Mardon teaches a process and a product of manufacturing a zirconium based alloy for a nuclear fuel element. The examiner notes that applicant recites his claimed product to be used also for a fuel assembly of a light water reactor (see claim 26).

Mardon teaches that his process results in a zirconium alloy that has satisfactory thermal creep behavior and good resistance under stress (see col. 1, lines 55+).

Mardon further teaches subjecting his material to:

*"at least one cold rolling sequence, without prior annealing, followed by annealing in the range 700 degree C to 750 degree C (generally in the range 720 degree.-740 degree C, and advantageously at about 730.degree C) for a period of three hours." Underlining provided. See col. 3, lines 34+.*

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Mardon performs cold rolling, which implies that this process is not at elevated temperatures but at some room temperature values. Also, absent applicant's definition of "ambient temperature", the examiner interprets the term broadly and reads it on the temperature at which Mardon performs his cold rolling step.

As to the claimed "reduction ratio lying in a range 2% to 20%," this is a matter of design. The required reduction ratio depends both on the final dimension of the final product, as well as the initial dimension of the material prior to cold rolling. Note that applicant recites a wide range for this reduction ratio (i.e., an order of magnitude) and he himself states that this ratio is the range of 5% to 15% or 5% to 10% (see page 8 of the specification). This is evidence that this ratio either varies depending on the particular application of the final product or is not critical to the claimed invention.

As to the annealing following the rolling step, Mardon teaches annealing temperature and annealing time that are within the claimed ranges. Note in this regard, MPEP 2131.03, which states:

"[W]hen, as by a recitation of ranges or otherwise, a claim covers several compositions, the claim is 'anticipated' if one of them is in the prior art." *Titanium Metals Corp. v. Banner*; 778 F.2d 775, 227 USPQ 773.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process, as disclosed by APA, by the teaching of Mardon, to subject the APA zirconium alloy, to a single rolling sequence without intermediate annealing, to gain the advantages thereof (e.g., produce a product with good stress resistance), because such modification is no more than the use of a well known expedient within the nuclear art.

Additionally, the claims would have been obvious because the technique for improving the zirconium alloy with flat arrangement in the APA was part of the ordinary capabilities of a person of ordinary skill in the art in view of the teaching of the technique for improvement in the zirconium alloy with tube arrangement in Mardon. Applying the process of Mardon to the zirconium alloy in the APA represents the use of a known technique for improvement of a similar product, i.e., the same alloy (albeit having different geometries) but used for the same field of application, i.e., nuclear reactors.

If applicant is of a different opinion, the claims are still unpatentable in view of the further teachings in either Graham or Katz, either one teaching that zirconium alloy is used as cladding material for nuclear fuel elements that can have either flat plate or tube configuration (see col. 2, lines 28+ in Graham or co. 2, lines 64+ in Katz).

Therefore, the claims would have been obvious because a person of ordinary skill has good reason to pursue the known option of using the improved process of manufacturing zirconium alloy of Mardon to the flat arrangement in the APA, based on the teaching of either Graham or Katz that this alloy can be satisfactorily applied for nuclear fuel element cladding in either flat or tube geometry. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

As to claim 18, either Zircaloy 2 or Zircaloy 4, which are conventional zirconium alloys used in nuclear fuel assemblies, includes the elements of the claimed alloy (see page 1 of the specification).



As to claim 22 and the reduction ratio of 5% to 16%, this is matter of design, as discussed above.

As to claim 24, the conventional Zircaloy 4 described in the paragraph bridging pages 10 and 11 of the specification, is cooled at a rate of at least 1°C/s.

As to claim 26, see discussion above on the teaching in either Graham or Katz.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Rick Palabrica/  
Primary Examiner, Art Unit 3663

February 19, 2008